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### BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE	)	
INVESTIGATION OF THE CONTINUED	)	CASE NO. GNR-E-02-01
REASONABLENESS OF CURRENT	)	
SIZE LIMITATIONS FOR PURPA QF	)	COMMENTS OF
PUBLISHED RATE ELIGIBILITY (i.e.,	)	VULCAN POWER COMPANY
1 MW) AND RESTRICTIONS ON	)	
CONTRACT LENGTH (i.e., 5 YEARS)	)	AUGUST 5, 2002

This filing is offered in rebuttal to filings of self-interested Idaho electric utilities who continue thirty years of opposition to expansion of clean renewable non utility generation in Idaho. This comments upon filings of a consultant to the Independent Energy Producers of Idaho (IEPI), apparently with little historical understanding of fossil fuel supply and price lessons across North America whose testimony relies upon thoroughly discredited gas price predictions of the Northwest Power Planning Council.

The gas price information upon which that IEPI filing is based has been consistent in only one way, the predictions have been consistently wrong. The author's own background in energy analysis and power policy processes is appended hereto.

#### Massive Gas Declines Lead to Power Price Increases

Oil history holds lessons for Idaho. In 1983, the United States complacently assumed that its oil energy supplies were secure, that oil would remain a low cost source of unlimited industrial expansion from its own oil supplies. Few in the oil business and fewer in energy policy leadership were prepared to deal with the immediate profound repercussions of the then peaking domestic supply.

This crucial energy supply reality was explained by the work of Shell oil economist named M. King Hubbert. The work of Hubbert explained why the United States was so susceptible to the foreign cartel oil embargo, shortages and price increases which followed in their wake. It is now known as the Hubbert Peak. Detailed analysis of decline curves has been applied to North American gas supplies. As with past oil peak impacts on vehicle fuel and industrial feedstocks prices, gas fuel shortages and price spikes will have profound negative impacts upon power prices in Idaho.

#### Hedge Gas Prices With Seven Cent Renewables

Today Idaho is facing medium term impacts of a second massive fossil fuel production peak, this time in methane gas, with resultant domestic gas shortages and gas fired power price increases much larger than forecast by utilities and respondents to this process. The only available hedge against such massive gas fuel price impacts are indigenous sources of renewable energy, most notably reliable baseload geothermal and biomass power.

This response focuses upon concrete examples of why Idaho requires a renewable insurance policy in the range of \$0.07 per kwh against over-reliance on gas fuel. Renewables will prove to be a bargain for Idaho customers over time. Based upon specific North American gas supply and price data, analysis indicates new supplies of gas fuel will be driven by expensive new LNG and Arctic gas. Future gas plants with long term fuel supply contracts (when those are even available) are in the range of \$0.07 per kwh or more. Renewable fuel supplies are local, not foreign, hence much more secure.

### **Executive Summary Conclusions**

Analysis of key power policy gas fuel questions present grim results. They include:

1. Future gas prices will exceed \$5.00 per mcf rising rapidly over time with resultant new power prices well in excess of \$0.07 per kwh rising over time with new gas plants and relatedly the conversion shift of some inefficient old gas plants to more efficient new plants is a short term effect;
2. All major North American gas basins are mature and are not now and cannot add significant new supply even at high gas drilling levels underway in 2001, all new basins together will not nearly match new gas power fuel demand and new gas from mature basins is always more costly;
3. Even both proposed Arctic pipelines add far too little-too late with about 10% to 12% addition in 7 to 8 years, long after gas demand is up well over 30 % (some estimate over 50% by then);
4. Breakeven costs for LNG exceed \$ 4.00 per mcf, and risk adjusted and time adjusted most of that gas can be expected to exceed \$ 5.00 per mcf; the 7 potential new LNG plants announced will add about 10% per cent to gas supplies, most take 5 to 10 years to permit and construct, again far too little-too late to avoid major gas constraints and major gas price increases, even along with construction of the both of the announced Arctic pipelines; and
5. Plans of major oil and gas firms to convert gas to liquid fuels will reduce gas supplies further;

The combination of the above factors together all indicate new gas fired power plants coming on line over the next 2 to 5 years, will likely have breakeven power prices above \$ 0.07 per kwh for with operating lives. There is also a distinct possibility that the next 3 to 10 year period will see massive gas fuel price volatility similar to and perhaps even more chaotic than, the gas prices experienced in California, the Northwest and Nevada last year.

By comparison, stable fuel price renewables at \$0.07 per kwh will prove an excellent hedge against gas fuel power rate shock and may will prove a bargain as they have been in California, providing of course that renewable prices are not in any way linked to natural gas prices.

### **Lessons Of Past Year Pose Future Questions**

Natural gas prices reached record levels in the past year. A result was power price rate shock. The United States has been warned again for the third time, this warning in the form of massive utility losses and customer outrage, of the fragility of added gas supplies from mature gas basins, even while the gas fuel mix component has been a relatively low portion of the national mix, which is about to see massive increases.

Key power policy questions are: (1) what are likely future gas prices and power prices given plans for more than 40,000 MW of new gas plants still being advanced, even after cancellations due to energy company and gas fuel price increases; and (2) can mature North American gas basins supply the new gas demand; and (3) where will new gas come from if not from mature gas basins, when and at what cost; and (4) what are the air pollution impacts of new gas plants particularly in light of the June, 2001 White House global warming study results; and (5) what are the costs of massive air pollution and how are they to be paid.

For the first time in history in 2000, United States gas use for power production exceeded industrial use according to Simmons and Company energy investment bankers. However gas well decline rates are up dramatically in US basins and the West Canadian Sedimentary Basin. Simmons and Company charts from May 2001 reported Canadian Well Decline Rates at 40 % in 1998, which was up from 20 % in 1990. Other reports by the firm describe the reasons for the decline rates there and in other North American mature gas basins. Their analysis entitled "Normalized Gulf of Mexico Decline Rates-1970 to 1996 found an increased gas well decline rate to 49 % in 1996 from 17 % per year in 1970.

### **Small Gas Production Increase**

The following page charts from large gas producer Anadarko sets forth a very disturbing projection of gas production which has increased very little in the past five years. (See Anadarko chart next page)

Richard Sharples, Anadarko Services president reported in 2001, "...increased drilling for gas in North America is countered by severe decline rates in many mature basins. In the Midcontinent, there simply aren't enough new prospects to reverse the 15% to 18% decline rates in the area no matter how many rigs are at work in the region. On the Gulf of Mexico shelf, just maintaining current production requires new drilling opportunities. And in the deep water, discoveries are mostly oil, with some associated gas."

William A Wise, CEO of El Paso Corp reported at a conference, "We're drilling a lot more, but we're not getting a lot more gas. In order to meet the projected United States demand of 30 Trillion cubic feet of gas per year in the next decade, supply must increase by an average of about 2.5Bcfd each year from 2000 to 2015. However the average annual increase over the last 5 years has been less than 1 Bcfd."

### **North America Mature Gas Basin Production Decline Rates**

The largest gas basin in North America is the West Canadian Sedimentary Basin which provides about 25% of all North American gas. It is not a likely source for increased supplies and/or cost effective prices required to meet new gas fired generation even though it is directly north of Idaho. This is a result of production decline rates, lower find rates, lower average find size and increased costs per unit output.

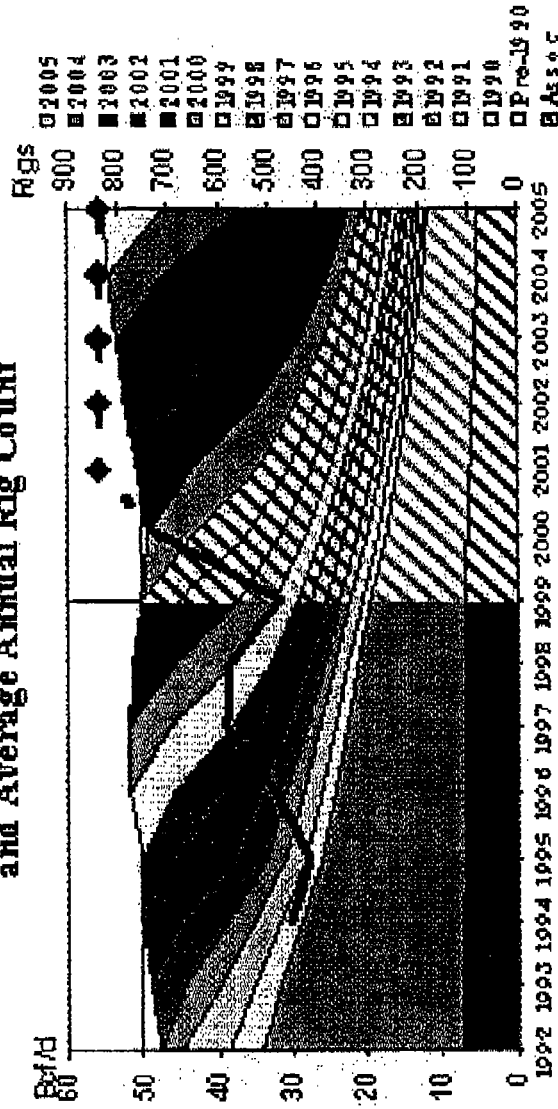
In April, 2002 at the North American Gas Strategies Conference in Houston, the COO of PanCanadian Energy (now Encana) said, "Despite a nearly 30% jump in completions in WCSB during 1999-2000, production rose only about 1 % and in 2000-01, the number of completions were up another 20% with production increasing by just 3%." This is not good news for Northwest gas supplies and future prices since the WCSB has historically been a stable low cost source of gas.

Petroleum industry standard, "Oilweek" reported on May 6, 2002 that investment banking firm First Energy Capital Corp stated that, "Given the first year decline rates that we are seeing for Alberta gas wells- still close to 40%- and initial production rates that are the lowest on record, we remain bearish on the potential for any gas production increases for Canada during 2002 in light of the slower drilling." According to Oilweek, the brokerage reported "higher prices in 2003 should encourage more drilling, but any gains will merely make up for declines this year and fall short of increased demand for gas as... power developments in Alberta and Ontario push domestic consumption higher."

However that has also changed dramatically in the past two years with the construction of two gas pipelines connecting WCSB with the American midwest and northeast through the Chicago hub. This author was an investment banker twenty years ago in New York working on financial analysis of what was then called the Northern Tier Pipeline project proposed to tap the WCSB for midwest-northeast markets. What is important is that it was nearly twenty years before the pipeline was built

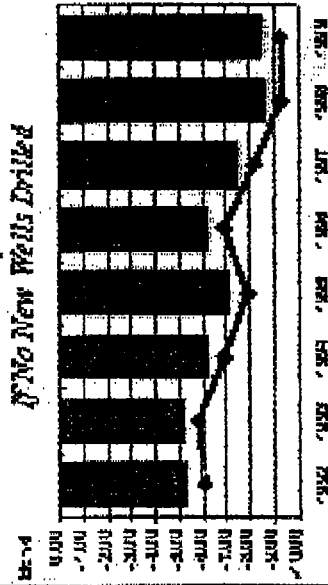
# U.S. Basins: Current Activity Case

## Average Annual Production, by Year of Initial Production, and Average Annual Rig Count

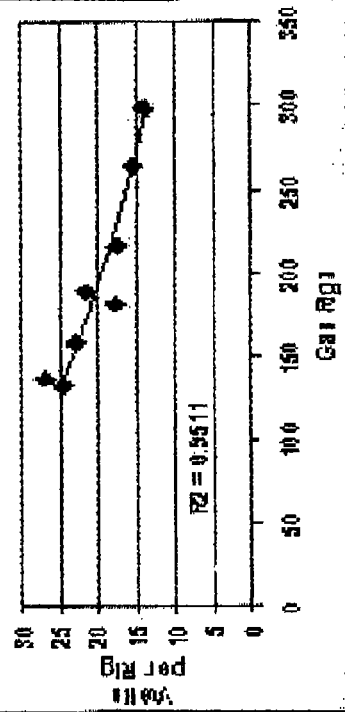


Current activity levels result in average supply growth less than 1 bbl/d per year. (1988-2005)

## The Speed of the Treadmill: Decline in Base Dry Gas Production



## Completion of Rigs with Wells per Rig in 1994-1995



and then within a two year span, not one, but two pipelines were constructed due to gas fired generation demand across the United States.

In a late 2000 speech, respected Houston investment banker Matthew Simmons, president of Simmons and Co said, "It is a sad commentary to make, but I fear we are now in the early days of a severe energy crisis that will take at least a decade to fix." In June 2001, Mr. Simmons discussed high well decline rates and low find rates despite much increased drilling activities. He summarized the grim gas situation in North America, I'm saying a 2 % gas supply increase this year but I can't see where its going to come from.

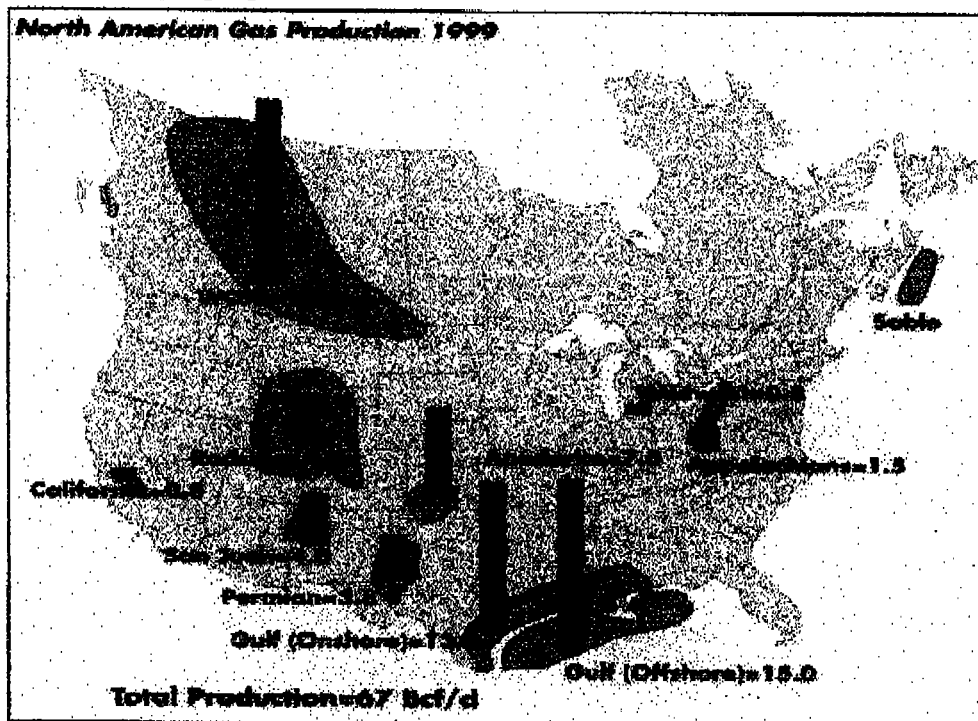
In late 2001 an investment banking firm Raymond James reported "...adding gas reserves is the only thing that will help the industry as a whole. And that's something the exploration and production sector has not been able to do despite a 130% increase in natural gas drilling over the past 18 months or so."

The implications are clear for that gas supplies to the Northwest, much increased competition and hence increased prices for a huge gas basin which is clearly about to hit production declines in output, despite massive new drilling there.

The status of North American gas demand, supplies, fuel prices directly impacts Idaho power price levels in this decade and sooner than is generally recognized. Therefore an overview of North American gas is relevant. North American gas supplies substantially lag gas demand at present and this imbalance has driven gas prices to record high levels in 2000. That is not expected to change soon.

The Company expects high natural gas prices through this decade due to the basic dynamics of the North American gas market. This market is driven by natural resource constraints and the implementation of longer term exploration drilling and pipeline projects.

Gas production in two major North American basins, Western Canada and Texas coastal plain, drive gas prices where Vulcan conducts business. Because gas is the primary fuel for new power plant competitors, Vulcan current and future prices are set by gas supplies from these basins. The map below locates those major gas production basins in North America.



Source: [National Energy Board, November, 2000]

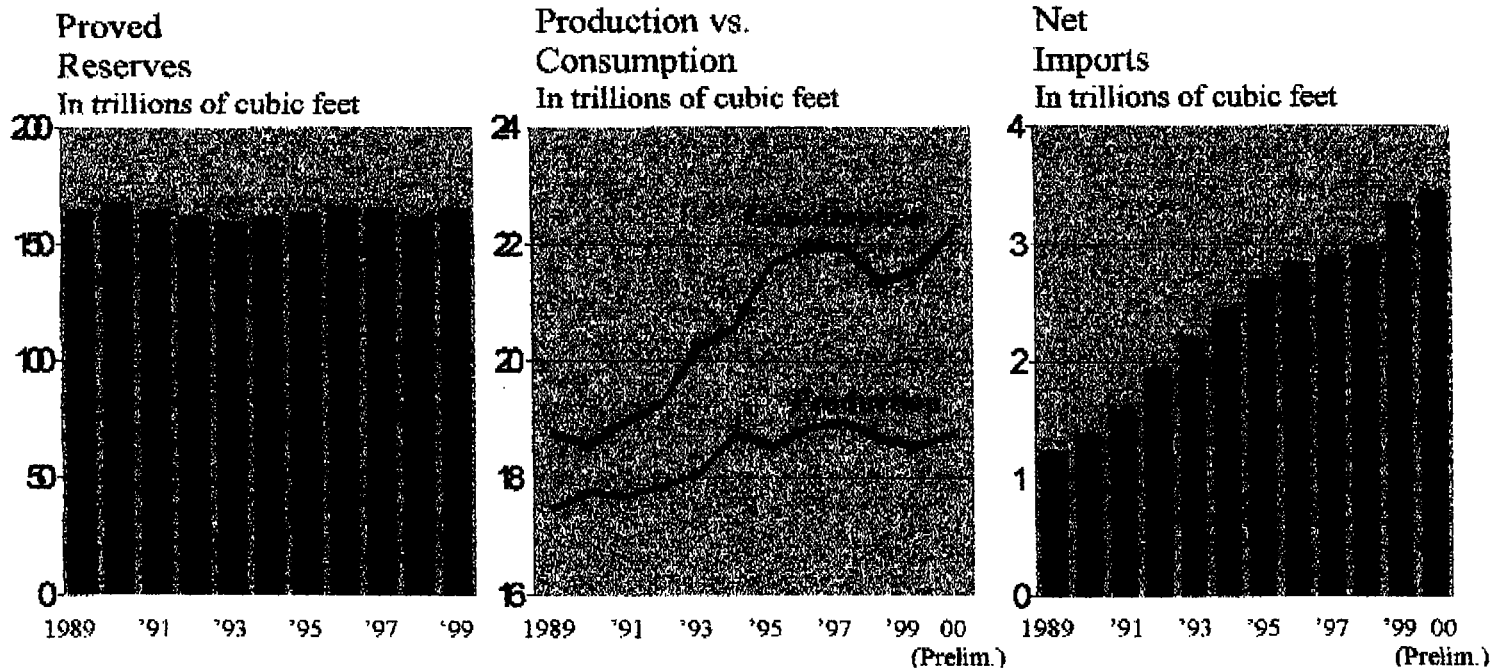
The *Wall Street Journal* reported on January 3, 2001, on the natural gas situation in North America. The headline read, "How Federal Policies, Industry Shifts Created A Natural Gas Crunch:"

"Federal efforts to promote clean air and energy independence have fed a surge in demand, in part by creating an expanding market for natural gas among the nations electric utilities...in addition to heating about 53% of American homes, natural gas is also being used to generate about 16% of the country's electricity, a percentage that is still growing....gas consumption by power plants grew at a 7.5% clip last year, and the big surge in construction of new generating facilities is just now getting under way. Today about 90% of new power generation facilities under construction are gas fired. ...the US now consumes more natural gas than it supplies, relying on Canada to make up most of the difference."

The following three charts from the US Energy Information summarize United States gas production declines and the gas shortage in the United States which have increased dramatically over the past decade.

### Natural Gas: Struggling to Keep Pace

U.S. natural-gas reserves are going nowhere fast. As production lags, gas consumption, fueled by gas-fired power plants and a hot economy, is climbing fast. Imports are struggling to fill the gap.



Source: Energy Information Administration, as Reported in *The Wall Street Journal*, 1/3/00

### United States Gas Production Declines

The *Wall Street Journal* report summarized reasons for the American gas industry supply shortage. In the early nineties Federal, "...policies helped make natural gas the new fuel of choice for

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electricity producers who started moving away from dirtier burning fuels such as coal and oil. The electricity industry started planning to bring scores of new gas fired power plants into service. At the same time big changes were underway in the structure of the domestic oil and gas industry. Many of the nation's deep pocketed major energy companies began to shift focus abroad...where production costs were lower than in the United States...majors sold or abandoned much of their production in the continental US. That left a greater share of domestic exploration and production in the hands of smaller independent companies."

The article described drilling expenditures of the smaller companies and even more importantly the rapid decline rates of the mature gas production basins in the United States. "Nowadays around 7,000 relatively small independent operators, drilling on land and in Gulf shallow waters, account for roughly 65% of the natural gas produced in the lower 48 states. The independents face a host of problems. For starters, many of the nation's older fields are running low. In the Gulf of Mexico, the source of about a quarter of the nation's natural gas supply, drillers have adopted new technologies...to wrest more gas from mature fields. But the additional gas has come at a cost: Fields that were experiencing 25% annual declines in production now are logging 50% drops."

The cumulative impacts of American gas industry resource production declines and other problems over the past decade have resulted in gas supply shortages that have been ameliorated by net gas imports, primarily from western Canada, growing in 2000 to 3.3 trillion cubic feet.

### **Western Canada Gas Supply Problems**

The Western Canadian Sedimentary Basin (WCSB) provides about 25 % of total gas in North America, about 16 billion cubic feet per day ("Bcf/d"). Remaining basin gas content, number of new wells drilled, exploration find rates, new production and decline rates together determine future supplies and power fuel gas prices directly impact both power market prices and gas supply available to meet demand. The National Energy Board of Canada conducted two landmark studies of the WCSB titled, Short term Natural Gas Deliverability from WCSB 2000-2002 and Dynamics and Pricing in December and November 2000, respectively. Excerpts from these reports follow.

"Two key trends were identified (by the Board in the WCSB). First, recently drilled wells start producing at lower rates than wells drilled more than five years ago. The second trend indicates that production from these wells declines more quickly than from older wells. Over the past few years the decline rates from recently drilled wells have been higher than from older wells, reaching as high as 40% per year. Assuming that recent trends in production characteristics will continue over the short term it is fair to say that future wells will generally be less productive than wells drilled a few years ago."

"...the Board recognizes that there are a number of uncertainties that will affect deliverability, the major factor being the level of drilling activity. With the increase of oil prices in 1999 and the accompanying increases in industry cash flow, Canadian producers increased drilling to a record 6,300 wells. Despite the strong level of activity however, natural gas production from the WCSB increase only marginally, by some .4 Bcf/d, or about 2 per cent. This sluggish increase in natural gas production has created some concern about the robustness of supply from the WCSB, especially if the coming winter in Canada is colder than the past few years."

### **Gas Transmission Pipelines Support High National Gas Prices**

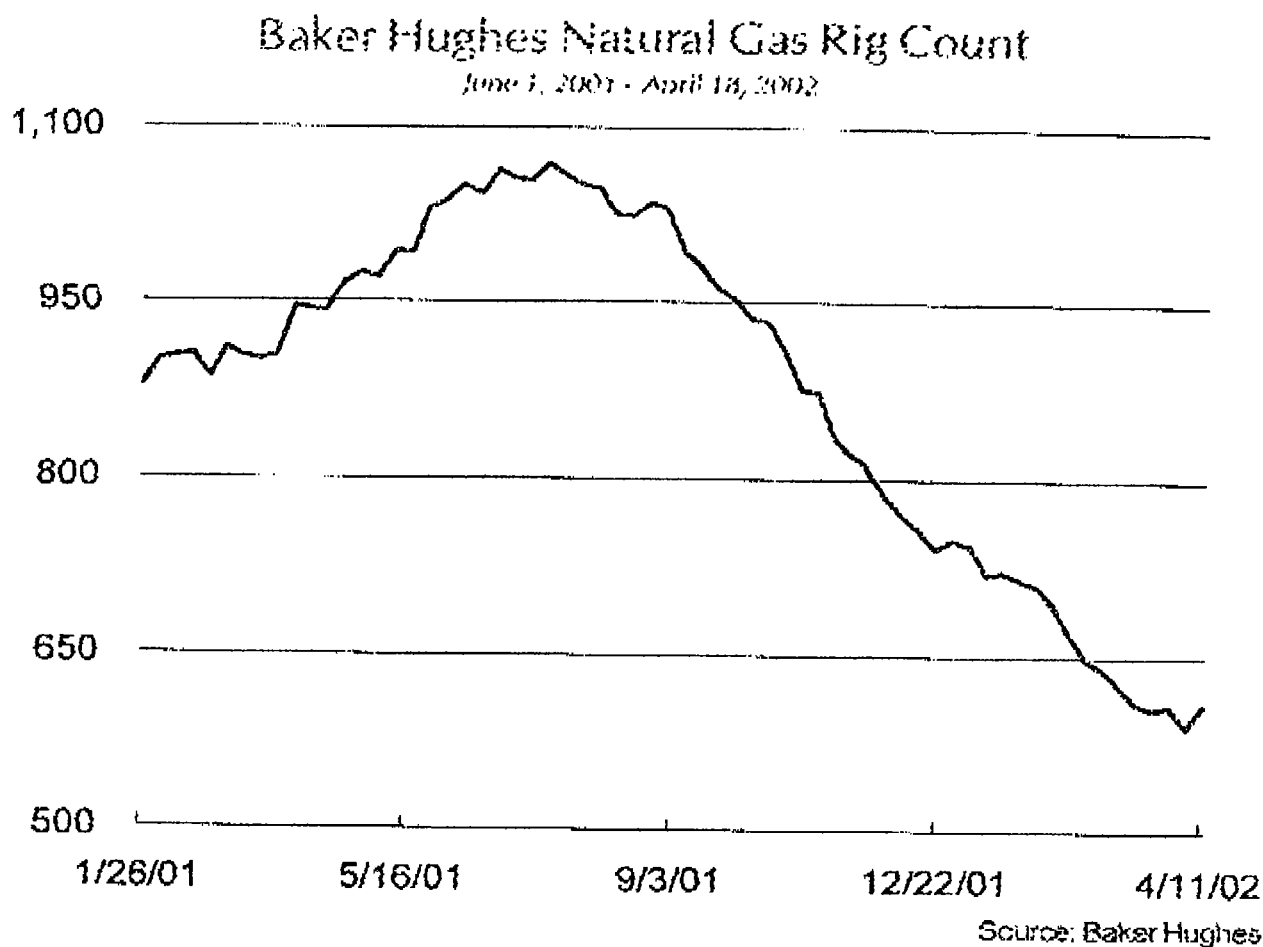
All major gas North American gas production basins now linked by major transmission pipelines. The TransCanada pipelines system moves 12 Bcf/d of gas to mid America. The Westcoast, Northwest and PGT pipelines to southern California were the other major West Canada gas pipelines until 2000. A recent development in response to new power plant gas fuel demand in the Midwest was

the startup of the new Alliance pipeline system transporting 1.3 Bcf/d Western Canadian gas to the Chicago area and the Vector pipeline transporting 700 million cf/day of this gas into Ontario province.

A second new gas pipeline started in November 2000 moving West Canada gas east to Chicago and beyond. Most Texas region gas services the Midwest and Northeast with laterals to California and the Northwest. The new markets for Western Gas created by the new West to East pipelines from Canada are likely to keep Western U.S. gas prices consistent with the national gas market whereas it had been protected through the lack of linkage previously.

#### Gas Drill Rig Count Decline

Adding fuel to the bleak outlook for gas supply and price impacts, the Baker Hughes gas drill rig count has dropped dramatically since hitting a highs a year ago and that means further drops in new gas finds and of course reduced supply. (See chart below)





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## Excerpts From CEERT Gas Fuel Power Study

The Center for Efficiency and Renewable Technologies published a study in May 2002 which elaborated upon some of the earlier comments in this response. Excerpts of that study follow in this section. This respondent did not participate in the creation of that study and is not in full agreement with all data contained therein. However, the general findings agree with our findings to wit, gas prices are going to increase substantially and gas fuel supply and prices may become extremely chaotic over the next three to ten years as power demand driven gas fuel shortages occur. Excerpts from that study follows.

### Risky Diet: North America's Growing Appetite for Natural Gas

#### Executive Summary

The U.S. Department of Energy's Energy Information Administration (USEIA) projects that demand for natural gas will increase rapidly in the next two decades, and that gas supplies for North America will continue to be largely produced domestically from inexpensive conventional resources. However, there is strong evidence to the contrary. This evidence indicates that North America increasingly will depend on more expensive unconventional natural gas resources, including imports from other continents.

Three alternative supply options dominate among the more expensive unconventional natural gas resources. Industry is actively pursuing all of these options. They include pipeline construction to bring gas from the Arctic to southern markets; expansion of deepwater production in the Gulf of Mexico; and development of liquefied natural gas (LNG) importation infrastructure.

The salient feature of all these options is that capital requirements are substantially higher than for North America's current, conventional natural gas supplies. As North America increasingly is forced to rely on alternative sources, natural gas prices will be higher than those projected by USEIA. The fact that industry is pursuing more capital intensive alternative sources is a good indication that industry insiders do not agree with USEIA supply projections. Moreover, contracts for future gas deliveries are trading at prices significantly higher than USEIA projections.

The prospect of dependence on LNG imported from other continents raises important national security concerns. North America already depends on imports for more than half of its petroleum supply, and protecting access to this petroleum is a foremost concern of U.S. foreign policy. That the U.S. and its North American neighbors are positioned to become dependent on imported LNG for natural gas, its second largest source of energy, suggests additional foreign policy and energy security concerns for the U.S. This prospect and the country's ability to avoid it by exploiting reasonable alternatives to imported natural gas, deserve vigorous public scrutiny and debate.

The large amounts of capital and long lead times required to develop LNG import facilities, Arctic pipelines, deepwater wells, and other unconventional sources of natural gas pose additional problems. There is reason to doubt whether sufficient investment will be made soon enough to prevent disruptive price spikes like those seen in the winter of 2000-2001. Actual shortages of gas may occur.

In the next decade or two, North America is expected to become dependent on natural gas imported from other continents, just as it now depends on imported petroleum. The transition from self-sufficiency to dependence on overseas imports of natural gas is likely to be marked by more market turmoil of the sort experienced in the winter of 2000-2001. Public policy measures should be considered to moderate the increase in demand for natural gas in order to reduce the need for imported gas and minimize market instability.

Demand for natural gas used to generate electricity in the United States is projected to double in the next two decades, an average annual increase of 4.5%. Unless policies are implemented to reduce this use, demand in electricity sector alone is projected to account for 55% of the expected increase in U.S. gas requirements. The forecast thus expects that the supply of electricity in North America will become increasingly dependent on natural gas while at the same time natural gas markets are likely to become increasingly turbulent. Any effective policy to reduce demand for natural gas and minimize the impact of gas market instability must reduce projected demand by the electricity sector.

One option currently under consideration in many states is to increase significantly the use of renewable energy resources for electric generation. By displacing natural gas-fired generation, renewable energy resources can reduce the impact of natural gas market volatility on the essential electricity sector. This paper summarizes developments in North American natural gas markets that are likely to have serious impacts on society and the role that development of renewable energy resources can play to reduce these impacts.

Free market proponents are fond of identifying this event as a market success. High prices, even expectations of high prices, appear to have provided the necessary incentives to increase production activities. Although gas prices reached unprecedented levels, the market did adjust and prices declined from their peak. The applicability of a benign market theory is suspect, however. Even with the marked increase in drilling activity, there was no significant increase in U.S. production of natural gas. Figure 3 shows that production in 2001 is nearly identical to production in 2000.

In anticipation of higher prices, drilling activity did increase, but production did not. Prices continued to rise until the immediate threat of shortages had passed and declined because seasonal demand decreased, not because higher prices attracted additional supplies. As discussed below, official projections are that U.S. production will increase 50% above current levels with little increase in price. The events of winter 2000-2001 cast considerable doubt on these projections. At some price level, remaining gas resources in North America would be developed and brought to market. But judging from recent experience, that price is likely to be substantially higher than currently forecast by USEIA.

Moreover, the situation in 2000-2001 was relatively trivial compared to the challenges facing the U.S. in the future. Potential supply shortages were small; gas in storage for the winter of 2000-2001 was only a few hundred bcf lower than the previous year. There were still opportunities for additional domestic production that were relatively inexpensive to develop quickly.

However, in the longer term it appears that domestic production of natural gas cannot meet demand projections without large increases in price. Alternative sources include gas from the arctic and overseas imports, but these alternatives are capital intensive and require long lead times. If demand for natural gas increases as projected and cannot be met by domestic production, price episodes such as those seen in the winter of 2000-2001 may become commonplace until sufficient infrastructure is built to import natural gas to North America from other continents.

Expectations for a dramatic and unprecedented increase in domestic gas production with only a modest increase in year 2020 prices above historical levels also are at odds with the experience of winter 2000-2001. Current trends in the industry suggest that more troubling scenarios are more likely.

For example, natural gas from the average U.S. well is now depleted much more quickly than those drilled only a decade ago. When a well is drilled into a gas reservoir, initial pressures are high and the gas escapes into the well rapidly. As the gas is released, the pressure and flow rates decrease. At some point the well does not produce gas at a high

enough rate of flow to be economically viable and the well is said to be depleted. A useful measure of the depletion rate is the "half-life" of the resource, the time required for the rate of flow of gas from a well to fall to one-half of the original rate. In 1990, the average half-life was 40 months, while by 1999 the half-life was reduced to 24 months. (See figure 4)

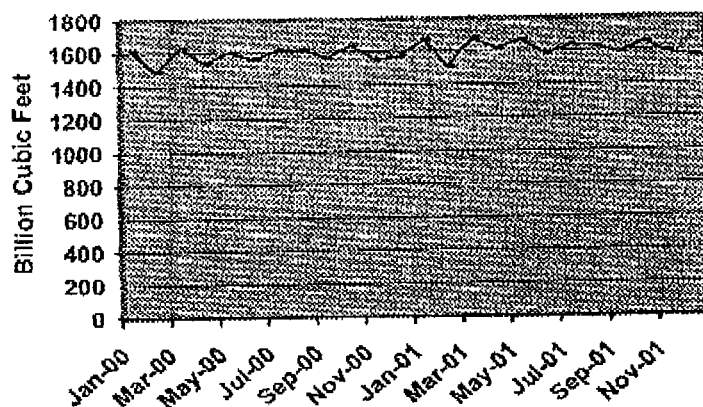
The rapid depletion of gas wells benefits producers by maximizing near term cash flow, much as "just in time" supply chains benefit manufacturing businesses. However, it also means that more capital is required to drill more new wells just to replace the production of older depleted wells. If production is to increase by 50% in the next two decades as USEIA projects, even more capital will be required. As we discuss below, the capital required to meet projected North American demand, whether through domestic or overseas supplies, is a fundamental issue that has profound implications for supplies and prices.

Many factors contribute to the more rapid depletion of gas wells; improved technology allows higher initial extraction rates, for example. But a troubling development that also contributes is that the best reservoirs of gas in the U.S. have already been tapped and increasingly smaller and/or unconventional plays, namely tight sands, coal bed and gas shales, are being exploited. A recent article in the Oil and Gas Journal cited the difficulty of exploiting these unconventional resources: "...the deep, tight formations challenge current drilling technology. Wells are being drilled to depths exceeding 14,000 ft, with horizontal laterals of as much as 5,000 ft that must be stimulated. Industry sources put the cost of those wells in the neighborhood of \$4.5 million each." As a consequence, the U.S. is increasingly dependent on imports of gas from more recently developed fields in Canada which have climbed steadily since 1990 and accounted for 16% of U.S. consumption in 2000 (see figure 5).

U.S. natural gas production is now projected to fall 4% in 2002. According to Robert Morris, oil and gas analyst for Salomon Smith Barney, Inc., "Producers have run through a lot of their best prospects in trying to drill up all they could" when prices were high in 2000-2001. According to Morris, developers are getting less new production per well because of the smaller fields being found and quickly depleted. "We would need 1,200 rigs in the field next year to keep U.S. production level."

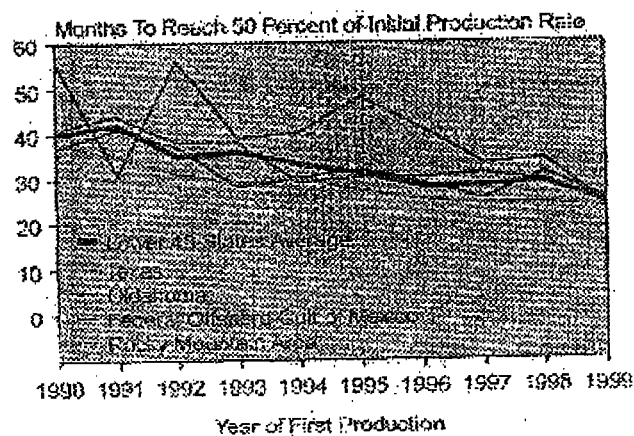
Figures 3, 4, and 5 are on the following page.

Figure 3. U.S. Dry Gas Production



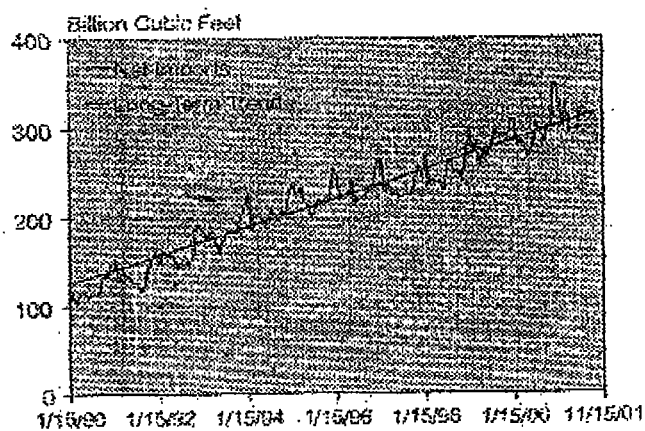
[Source - USEIA]

Figure 4. Natural Gas Well Production Half-Lives by Region



[Source - USEIA]

Figure 5. Total U.S. Natural Gas Imports by Month



[Source - USEIA]

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### **Respondent Energy Background**

Mr. Steve Munson is an energy professional with thirty years participation in international energy markets including: graduate thesis in the geopolitical impacts of declining oil supplies; Wall Street energy investment banking; and correctly warning Federal and state agencies and electric utilities since 1995 of the recent power shortfalls and gas supply price impacts throughout the West. He has warned power policy participants of impending electric power price increases driven by North American mature gas basin depletion rates and future foreign LNG supplies.

Mr. Munson is the CEO of Vulcan Power Company which has a multimillion dollar geothermal power investment in Idaho at Raft River. It has been stymied along with others by the past 10 years of Idaho Power and Avista opposition to geothermal power gaining a foothold in Idaho. The Raft River geothermal site is now being developed by US Geothermal, a company of which Vulcan Power Company is a minority shareholder.

Vulcan Power Company was instrumental in the passage of a 15 % renewable portfolio standard in Nevada, is a participant in the ongoing 10 % renewable portfolio standard rule process in New Mexico and the California 20 % renewable portfolio standard law process which looks likely of passage. He is a founding member of the Federal Geothermal Working Groups of Idaho, New Mexico, and Oregon. He a board member of the Geothermal Energy Association and a member of the Geothermal Resources Council. Mr. Munson holds an MBA in Finance from the Stanford Graduate School of Business and an MA in Political Science from Stanford University.